What is claimed is:

1. A system for multiplexed thermocycling, comprising:

a microchip having a plurality of micro-heating areas thereon; and

a non-contact heating source for the micro-heating areas.

2. The system of claim 1, further comprising non-contact means for cooling the micro-heating areas.

3. The system of claim 2, wherein the means for cooling is a compressed air source.

4. The system of claim 3, wherein the compressed air source has means for chilling air.

5. The system of claim 2, wherein the air from said cooling means has a pressure of between about 1 and 150 psi.

6. The system of claim 2, wherein the rate of flow of air from said compressed air source is controlled by a solenoid valve.

7. The apparatus of claim 2, wherein said cooling means is structured to cause forced air to impinge on the micro-heating areas from a position angularly offset with respect to the direction of heat applied from said heating means.

8. The system of claim 1, further comprising means for monitoring the temperature of the micro-heating areas.

9. The system of claim 8, wherein the means for monitoring the temperature is selected from the group consisting of a thermocouple and a remote temperature sensor.

10. The system of claim 9, wherein the remote temperature sensor is an interferometer.

11. The system of claim 10, wherein the interferometer is and Extrinsic Fabry-Perot Interferometer.

12. The system of claim 1, further comprising a microprocessor operatively associated with the heating means, the cooling mean, the temperature monitoring means, and the microchip.

13. The system of claim 12, wherein said microprocessor means has means for establishing a plurality of desired temperatures and a plurality of desired dwell times at each desired temperature.

14. The system of claim 12, wherein said microprocessor means has means for effecting DNA amplification in a sample.

15. The system of claim 1, wherein the non-contact heating source is at least one IR source.

16. The system of claim 15, wherein the IR source is a halogen lamp.

17. The system of claim 15, wherein the IR source is a tungsten lamp.

18. The system of claim 15, wherein said IR source is disposed in a spaced relationship with respect to the microchip.

19. The system of claim 15, further comprising filter means interposed between the IR source and the microchip.

20. The system of claim 1, further comprising a fiber optic bundle for directing radiation from the non-contact heating source to each of the micro-heating areas.

21. The system of claim 1, wherein the micro-heating areas comprises a sample loading reservoir, a thermocycling chamber, and a recovery reservoir fluidly connected with each other.

22. The system of claim 1, wherein the thermocycling chamber and the recovery reservoir is fluidly connected through a valve.

23. The system of claim 1, wherein the micro-heating areas are arranged in a circular ring on the microchip.

24. The system of claim 1, wherein the chip is mounted on a rotor that is capable of spinning the chip around its center.

25. The system of claim 24, wherein the micro-heating areas are arranged in a circular ring on the microchip equidistant from the center.

26. The system of claim 1, wherein the microchip includes a waveguide doped therein to conduct radiation from the non-contact heating source to the micro-heating areas.

27. A method for multiplexed thermocycling, comprising the steps of:

a) providing a microchip having a plurality of micro-heating areas thereon;

b) providing a small volume sample in each of the micro-heating areas;

c) heating the samples using non-contact heating source;

d) cooling the sample using non-contact means for cooling; and

e) repeating steps c) and d) to perform a desired number of cycles.

28. The method of claim 27, wherein the non-contact heating source is at least one IR source.

29. The method of claim 28, wherein the IR source is a halogen lamp.

30. The method of claim 28 wherein the IR source is a tungsten lamp.

31. The method of claim 28, wherein said IR source is disposed in a spaced relationship with respect to the microchip.

32. The method of claim 27, wherein the heating step comprises conducting radiation from the non-contact heating source through a fiber optic bundle which conducts the radiation from the non-contact heating source to each of the micro-heating areas.

33. The method of claim 27, wherein the micro-heating areas comprises a sample loading reservoir, a thermocycling chamber, and a recovery reservoir fluidly connected with each other.

34. The method of claim 33, wherein the thermocycling chamber and the recovery reservoir is fluidly connected through a valve.

35. The method of claim 27, wherein the micro-heating areas are arranged in a circular ring on the microchip.

36. The method of claim 27, wherein the microchip is mounted on a rotor that is capable of spinning the chip around its center.

37. The method of claim 27, wherein the micro-heating areas are arranged in a circular ring on the microchip equidistant from the center.

38. The method of claim 27, wherein the heating step comprises spinning the micro chip such that radiation from at least one stationary heating source impinges on the micro-heating areas as they passes the at least one stationary heating source.